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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,448	03/19/2004	Lakhi N. Goenka	10541-1942	7284

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EXAMINER
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PHILLIPS, FORREST M

ART UNIT	PAPER NUMBER
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2837

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/25/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/804,448

Applicant(s)

GOENKA ET AL.

Examiner

Forrest M. Phillips

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1- 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cornaglia (EP1388653) in view of Japanese publication 03-107522 Nakachi (hereinafter the Japanese patent).

With respect to claim 1 Cornaglia discloses a resonator for attenuating pressure pulsations received through an air passage, the resonator comprising: a housing (8 in figure 2) defining a resonator chamber (4 in figure 2); a moveable member (13 in figure 2) located within the resonator chamber and cooperating with the housing to divide the resonator chamber into first and second volumes (11 and 12 respectively in figure 2); a first port (10 in figure 2 ) coupling the first volume with the air passage; a second port (15 in figure 2) coupling the second volume with the air passage (3 in figure 1); an actuator (40 in figure 1) coupled to the moveable member and configured to move the moveable member thereby changing the first and second volumes.

Cornaglia does not disclose a first or second valve located in the ports of the resonator to selectively connect the volumes to the air passage.

The Japanese patent discloses the use of valves (13 and 14 in figure ) located in the ports of resonator cavities.

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At the time of the invention it would have been obvious to one of ordinary skill in the art to use the valves of the Japanese patent for the ports of Cornaglia to allow a greater ability to tune the resonant structure.

With respect to claim 2 Cornaglia discloses wherein the actuator is configured to move the moveable member thereby decreasing the first volume as the rpm of the engine increases (paragraph 22).

Cornaglia does not disclose having the first valve open while the moveable member is decreasing the volume of the first volume.

The Japanese patent discloses the opening of a valve in conjunction with changing sizes of resonant structures (abstract).

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of the Japanese patent to open the valves and close the valves in accordance with the change in size of resonant structure with the resonant structure of Cornaglia to provide a greater variability to the system to more precisely tune the resonant structure.

With respect to claims 3 and 4, the Japanese patent discloses wherein the second valve is configured to open corresponding to a change in the rpm of the engine and that the only valves to be open at a given time are the ones corresponding to the resonant volumes to be used at a given engine parameter (constitution).

With respect to claim 5 Cornaglia discloses (paragraph 22) moving the partition in response to an increase in engine rpm. It would have been obvious to one of ordinary skill in the art especially in view of the Japanese patent that as engine rpm increased

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the size of resonant chamber would necessarily have to decrease. The use of valves for the ports would have rendered it obvious to one of ordinary skill to have the valve open as the volume that was controlling the resonant frequency was being altered so that it would have an effect.

With respect to claims 6 and 7 the Japanese patent discloses wherein the valves are solenoids (constitution)

With respect to claim 8 Cornaglia discloses wherein the actuator is an electric motor (40 in figure 1).

With respect to claim 9 the Japanese patent discloses wherein the first and second valves are independently controllable to attenuate multiple frequencies (constitution).

With respect to claim 10 Cornaglia discloses a resonator for attenuating pressure pulsations received through an air passage, the resonator comprising: a housing (8 in figure 2) defining a resonator chamber (4 in figure 2); a moveable member (13 in figure 2) located within the resonator chamber and cooperating with the housing to divide the resonator chamber into first and second volumes (11 and 12 respectively in figure 2); a first port (10 in figure 2 ) coupling the first volume with the air passage; a second port (15 in figure 2) coupling the second volume with the air passage (3 in figure 1); an actuator (40 in figure 1) coupled to the moveable member and configured to move the moveable member thereby changing the first and second volumes a controller (42 in figure) configured to manipulate the moveable member.

Cornaglia does not disclose a first or second valve or a controller in communication with the first and second valves.

The Japanese patent discloses a controller (16) in communication with valves controlling resonant chambers (constitution).

At the time of the invention it would have been obvious to one of ordinary skill in the art to use the valves and controller as taught by the Japanese patent with the resonator of Cornaglia to provide a means of further tuning the resonator.

With respect to claim 11 Cornaglia further discloses wherein the controller is configured to drive the actuator moving the moveable member thereby decreasing the first volume as the rpm of the engine increases.

Cornaglia does not disclose wherein while the first valve is open the moveable decreases the first volume.

The Japanese patent discloses the opening of valve in response to engine speed and activating changing sized resonators.

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of the Japanese patent to have changing sizes of resonators activated using a valves system for the resonant chambers of Cornaglia to provide a greater degree of control to the resonator.

With respect to claims 12 and 13 the Japanese patent discloses wherein the controller is configured to open and close the valves according to a shift in the rpm range of the engine (constitution). It would have been understood by one of ordinary

skill in the art that the valves would only be open in order to activate the resonant chambers while a certain volume of the resonant structure is to be activated.

With respect to claim 14 Cornaglia discloses wherein the controller is configured to drive the actuator moving the movable member according to an increase in the rpm of the engine (paragraph 22) it would have been obvious to one of ordinary skill in the art that with an increase in rpm of the engine a smaller resonant chamber would be required, particularly in view of the Japanese patent which teaches activating smaller resonant chambers as engine rpm increases (constitution). It would have been obvious to have the valve open to the resonant chamber whose volume is being changed according to a change in engine parameter so that the change in volume would effect the resonance characteristics.

With respect to claims 15 and 16 the Japanese patent further discloses wherein the valves to be used are solenoids (constitution).

With respect to claim 17 Cornaglia further discloses wherein the actuator is an electric motor (figure 1).

With respect to claim 18 the Japanese patent further discloses wherein the controller is configured to independently control the first and second valves to attenuate multiple frequencies (constitution)

With respect to claim 19 Cornaglia discloses a resonator for attenuating pressure pulsations received through an air passage, the resonator comprising: a first adjustable volume (11 in figure 2) defined in part by a housing (8 in figure 2); a second adjustable volume (12 in figure 2) defined in part by a housing; a first port (10 in figure 2)

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communicating the first volume with the air passage (2 in figure 1) a second port (15 in figure 2) communicating the second volume with the air passage; the first and second volumes each being adjustable by an actuator (40 in figure 1). Cornaglia also discloses (paragraph 22) the resonant volume changing according to engine rpm.

Cornaglia does not disclose the use of valves in the ports to selectively connect the volumes to the air passage.

The Japanese patent discloses the use of valves (13, 14 in figure) for selectively opening and closing ports of resonant structures. The Japanese patent also discloses the resonant chambers being activated according to the engine rpm such that as engine rpm increased the size of resonant volume decreases.

It would have been understood by one of ordinary skill in the art that the change in size of the first resonant volume according to engine rpm need be done while the valve to that volume was open in order that it would effect the resonant characteristics of the passage way.

At the time of the invention it would have been obvious to one of ordinary skill in the art to use the valve structure of the Japanese patent for the ports of the resonator of Cornaglia.

With respect to claims 20 and 24 the Japanese patent discloses wherein the valves are open and closed independent of one another (constitution) it would have been understood that the second valve would be opened when the first valve was closed when the engine speed required only the second resonant volume be activated.



With respect to claim 21 Cornaglia further discloses wherein the first and second volumes are adjustable by a common actuator (40 in figure1).

With respect to claims 22 and 23 the Japanese patent further discloses wherein the valves are solenoid valves (constitution).

With respect to claim 25 The Japanese patent further discloses wherein the first and second valves are independently controllable (constitution).

With respect to claims 26-28 Cornaglia discloses wherein moving the moveable member incre4ases the first volume while decreasing the second volume.(refer to figures and paragraph 22)

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Refer to 892..

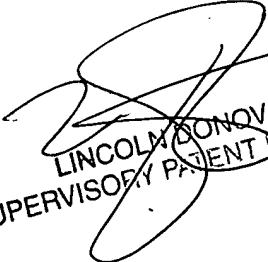
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Forrest M. Phillips whose telephone number is 5712729020. The examiner can normally be reached on Monday through Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan can be reached on 5712721988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

FP

  
LINCOLN DONOVAN  
SUPERVISORY PATENT EXAMINER